

REMARKS

Claims 1-25 are all the claims pending in the application. By this Amendment, Applicant adds claims 22-25. Claims 22-25 are supported throughout the Specification, for example see pages 23-25 of the Specification.

Also, by this Amendment, Applicant editorially amends claim 1. The amendments to claim 1 were made for reasons of precision of language and consistency, and do not narrow the literal scope of the claim and thus do not implicate an estoppel in the application of the doctrine of equivalents. The amendments to claim 1 were not made for reasons of patentability.

Applicant thanks the Examiner for acknowledging the claim to foreign priority and confirming the receipt of the certified copy of the priority documents.

The Examiner rejected claims 1-9 under 35 U.S.C. Section 112, second paragraph, as being indefinite, claims 1-5, 7, 9-13, 16-17, 19 and 21 under 35 U.S.C. § 102(b) and claims 6, 8, 14-15, 18 and 20 under 35 U.S.C. § 103(a). Applicant respectfully traverses these rejections and respectfully requests the Examiner to reconsider and withdraw these rejections in view of the following remarks.

Rejection under 112, second paragraph.

With regard to the 112 rejection of claims 1-9, the Examiner asserts that the phrase “at least of which” is indefinite. Applicant respectfully thanks the Examiner for pointing out, with particularity, the aspects of the claim thought to be indefinite. Applicant respectfully requests

the Examiner to withdraw this rejection in view of the self-explanatory claim amendment being made herein.

Prior Art Rejections

Claims 1-5, 7, 9-12, 17, 19, and 21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,891,656 to Zarling (hereinafter “Zarling”) and claims 1-5, 10-13, and 16-17 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,954,714 to Pollak (hereinafter “Pollak”). In addition, claims 6 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Zarling as applied to claims 1 and 10 above, and further in view of U.S. Patent No. 6,040,940 to Kawasaki (hereinafter “Kawasaki”), claims 8 and 20 as being unpatentable over Zarling in view of U.S. Patent No. 5,936,731 to Cabib (hereinafter “Cabib”) and claims 14 and 15 as being unpatentable over Pollak in view of U.S. Patent No. 5,430,813 to Anderson (hereinafter “Anderson”).

102 Rejections

To begin, the Examiner rejected claims 1-5, 7, 9-12, 17, 19, and 21 under 35 U.S.C. § 102(b) as being anticipated by Zarling and claims 1-5, 10-13, and 16-17 as being anticipated by Pollak. Turning to the cited art, Zarling relates to sensitive detection of analytes. The up-converting labels permit essentially total rejection of non-specific background auto fluorescence and are characterized by excitation and emitted wavelengths that are typically in the infrared or visible spectrum, and thus avoid the potentially damaging effects of ultraviolet radiation. The up-converting labels of the reference convert long-wavelength excitation radiation (e.g., near-IR) to emitted radiation at about one-half to one-third the wavelength of the excitation wavelength.

Since background fluorescence in the visible range is negligible if near-IR excitation wavelengths are used, the use of up-converting labels provides essentially background-free detection of signal (*see* Abstract and col. 5, lines 25 to 41).

Globally, Pollak, on the other hand, relates to a photographic analysis device capable of analyzing the presence of fluorescent radiation. It has a light source for emitting exciting pulses onto a sample, a camera for continually exposing a photographic film and a rotating chopper for controlling the light source and the camera (*see* Abstract, col. 3, lines 4 to 15). In particular, Pollak teaches exposing film after a predetermined delay with respect to the moment of complete blocking of the flash lamp (col. 4, lines 34 to 41); thus causing a phase relationship between the two. Appropriate filters are used to block radiation from the lamp (col. 4, lines 17 to 21). Exposing the film after the background fluorescence has subsided will lead to a more accurate measuring of only prolonged fluorescence.

The Examiner contends that Zarling suggests each feature of independent claim 1 and that Pollak suggests each feature of independent claim 1. These rejections are not supportable for at least the following reasons. Claims 1 and 10 are the only independent claims. First, claim 1 recites *irradiating an image carrier comprising specimen spots and detecting residual fluorescence emission released using a two-dimensional sensor*.

Zarling deals with providing an up-converting label which absorbs radiation and emits it at higher frequencies, thereby providing an enhanced signal to noise ratio. The operation of the Zarling reference does not specifically contemplate stopping of the stimulating ray for the specimens, followed by residual fluorescence detection using a two dimensional sensor. For

example, the excitation sources in Zarling comprise point source elements that would not irradiate the specimens that would allow detection of the specimens in an area CCD array. That is, in Zarling, the laser light is preferably focused on a small region of the sample, and light emanating from this region is collected and directed to the detector (see Fig. 10; Fig. 28; col. 5, line 66 to col. 6, line 5). In short, Zarling, is no different from the prior art discussed in the specification, it irradiates a portion of a sample at a time. Zarling fails to teach or suggest a stimulating ray emanating the specimens simultaneously.

Next turning to Pollak, it does not include a two-dimensional sensor or a two-dimensionally distributed specimen spots where they will be irradiated simultaneously. The Examiner relies on general discussion at col. 5, lines 15 to 35 of Pollak to teach the sensor. However, the cited portion only teaches a camera 34, which is positioned to focus along the second path as directed towards the sample to avoid any reflecting light directly impinging on the camera. The camera in question relates to a photographic film camera (col. 5, lines 19-21). There is no teaching of a two-dimensional sensor.

In addition, Pollak teaches that the light is focused on a small portion 32 of the sample 21 and it is this small portion that is detected by the camera (col. 4, lines 56 to 67 and col. 5, lines 6 to 28). That is, Pollak fails to teach or suggest simultaneously emitting light on to the specimens as set forth in claim 1. In stead, Pollak only teaches emitting light onto a small portion 32 of the sample. It too, irradiates the sample in parts. In summary, the deficiencies of the Pollak reference fall to the Examiner's burden to show inherent inclusion of the claim elements.

Therefore, for all the above reasons, independent claim 1 is patentable. Claims 2-5, 7 and 9 are patentable at least by virtue of their dependency on claim 1.

With respect to claim 10, it recites limitations similar to the limitations argued above with respect to claim 1. Since claim 10 contains features that are similar to the features argued above with respect to claim 1, those arguments are respectfully submitted to apply with equal force here. For at least substantially the same reasons, claim 10 is patentably distinguishable from Zarling and Pollak. Moreover, claims 11-13, 16-17 and 19-21 are patentable at least by virtue of their dependency on claim 1.

103 Rejections

Next, claims 6 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Zarling in view of Kawasaki. Claims 6 and 18 depend upon claim 1 and 10, respectively. It was already demonstrated that Zarling does not meet all the requirements of independent claims 1 and 10. Kawasaki is relied upon only for its teaching of a Fresnel lens. Clearly, Kawasaki does not compensate for the above-identified deficiencies of Zarling. Together, the combined teachings of these references would not have (and could not have) led the artisan of ordinary skill to have achieved the subject matter of claims 1 and 10. Since claims 6 and 18 dependent upon claims 1 and 10, respectively, they may be patentable at least by virtue of their dependency.

Claims 8 and 20 are rejected as being unpatentable over Zarling in view of Cabib. Claims 8 and 20 depend upon claims 1 and 10, respectively. It was already demonstrated that Zarling does not meet all the requirements of independent claims 1 and 10. Cabib is relied upon only for its teaching of a cooled CCD camera. Cabib only teaches a method of spectral imaging

aimed at detecting and analyzing fluorescent in situ hybridization employing numerous chromosome paints and loci specific probes each labeled with a different fluorophore (col. 6, lines 1 to 17).

Moreover, there is no motivation for combining the two references. Cabib teaches spectral imaging. That is, it obtains a mass spectrum by deflecting ions into a thin slit. In addition, Cabib teaches eliminating background noises by analyzing the shape and range of the fluorescent dye and the spectral shape and range of the background luminescence (col. 23, lines 18 o 26). Zarling, on the other hand, deals with providing an up-converting label which absorbs radiation and emits it at a higher frequency, thereby providing an enhanced signal to noise ratio. Thus, it solves the problem through a different solution. There is no suggestion that it would be advantageous to use both solutions to the same problem.

Furthermore, Cabib deals with spectral imaging, which is a significantly more complex system than just data imaging. Thus, one of ordinary skill in the art who just wanted an imaging data of residual fluorescence would not have been motivated to implement a complex system of splitting the emitted radiation into a spectrum just to remove noise. Finally, Cabib only deals with fluorescence, whereas Zarling deals with phosphors. In short, there are a number of reasons, why one of ordinary skill in the art would not have been motivated to combine Cabib and Zarling.

In addition, Cabib does not compensate for the above-identified deficiencies of Zarling. In short, together, the combined teachings of these references would not have (and could not have) led the artisan of ordinary skill to have achieved the subject matter of claims 1 and 10.

Since claims 8 and 20 dependent upon claims 1 and 10, respectively, they may be patentable at least by virtue of their dependency.

Finally, claims 14 and 15 are rejected as being unpatentable over Pollak in view of Anderson. Claims 14 and 15 depend upon claim 10. It was already demonstrated that Pollak does not meet all the requirements of independent claim 10. Anderson is relied upon only for its teaching of a light guide. Clearly, Anderson does not compensate for the above-identified deficiencies of Pollak. Together, the combined teachings of these references would not have (and could not have) led the artisan of ordinary skill to have achieved the subject matter of claims 10. Since claims 14 and 15 dependent upon claim 10, they may be patentable at least by virtue of their dependency.

Conclusion and request for telephone interview.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

Amendment Under 37 C.F.R. § 1.111
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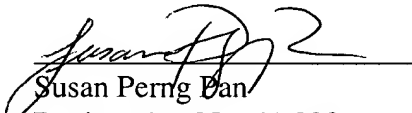
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